

## An altitudinal number density distribution of oxygen ions near the cusp estimated from the result of the optical observation

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We built the Extreme ultraviolet scanner (XUV) for imaging oxygen ions to outflow from the polar ionosphere into the magnetosphere. The XUV onboard a sounding rocket SS-520-2 imaged the oxygen ions above 1000 km altitude near the polar cusp on December 4, 2000.

The XUV is a normal incidence telescope that has a peak sensitivity at the wavelength 83.4 nm of OII emission and consists of a Mo coated mirror, a band pass filter and a channel electron multiplier. The band pass filter selectively transmits OII emission and eliminates background emissions such as HeI emission at the 30.4 nm, HeII emission at the 58.4 nm, and HI emission at the 121.6 nm. The observed OII emission intensity is proportional to the ion density integrated along the line of sight. Therefore the observed OII emission intensity distribution makes possible to determine the oxygen ion distribution.

The OII emission intensity distribution observed near the apogee presents the peak intensity of 8 Rayleigh in the line-of-sight directions parallel to the auroral oval and the intensity of 6 Rayleigh in the other directions.

In this presentation, we will present an altitudinal number density distribution of oxygen ions near the cusp estimated using ionospheric plasma parameters observed during the experiment as boundary conditions and discuss adequacy of the distribution model by comparing the intensity calculated from the estimated distribution with the observed intensity.